User Guide

Distribution Amplifier

FOX DA8

Eight Output Fiber Optic
Distribution Amplifier

Extron Electronics
INTERFACING, SWITCHING AND CONTROL

68-1461-01 Rev. B
05 11

Safety Instructions • English

This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Consignes de Sécurité • Français

Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Avertissement

Alimentations • Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Instrucciones de seguridad • Español

Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

安全须知 • 中文

这个符号提示用户该设备用户手册中有重要的操作和维护说明。

这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 • 用户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

警告

电源 • 该设备只能使用产品上标明的电源。 设备必须使用有地线的供电系统供电。 第三条线（地线）是安全设施，不能不用或跳过 。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 • 妥善布线， 避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。 设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。 不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。

FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

The Class A limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

NOTE: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance with FCC emissions limits.

For more information on safety guidelines, regulatory compliances, EMI/EMF compliance, accessibility, and related topics, **click here**.

Notational Conventions Used in this Guide

TIP: A tip provides a suggestion to make setting up or working with the device easier.

NOTE: A note draws attention to important information.

CAUTION: A caution warns of things or actions that might damage the equipment.

WARNING: A warning warns of things or actions that might cause injury, death, or other severe consequences.

Copyright

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Trademarks

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Introduction

The topics covered in this section are:

- About this Guide
- About the FOX DA8
- Features

WARNINGS:
- The FOX DA8 outputs continuous invisible light, which may be harmful and dangerous to the eyes; use with caution.
- Do not look into the rear panel fiber optic cable connectors or into the fiber optic cables themselves.
- Plug the attached dust caps into the optical transceivers when the fiber optic cable is unplugged.

About this Guide

This guide contains information about the two models of Extron FOX DA8 fiber optic distribution amplifiers (DAs). The DA8 is available in two transmission modes, which define the transmission range of the DA:

- **FOX DA8 MM —** A 1-input, 8-output multimode DA, with a range of up to 2000 m (6561 feet) on the input and each output
- **FOX DA8 SM —** A 1-input, 8-output singlemode DA, with a very long range of up to 30 km (18.75 miles) on the input and each output

NOTES:
- The multimode and singlemode DAs are physically and functionally identical with the exception of the effective range of transmission. In this manual, the terms "FOX DA8" and "FOX DA" refer to a DA8 of either transmission mode.
- Many products are compatible with the Extron FOX DA8. They will be identified where appropriate, but not specifically described in this manual.
- The FOX DA8 MM and the FOX DA8 SM are not compatible.

About the FOX DA8

The Extron FOX DA8 product family (see **figure 1**) consists of two models of ultra-high performance fiber optic distribution amplifiers.

The FOX DA8 accepts a proprietary input optical signal from a compatible Extron fiber optic transmitter (Tx). The optical signal can include video, audio, and one-way (transmitter-to-receiver [Rx]) RS-232 communications.

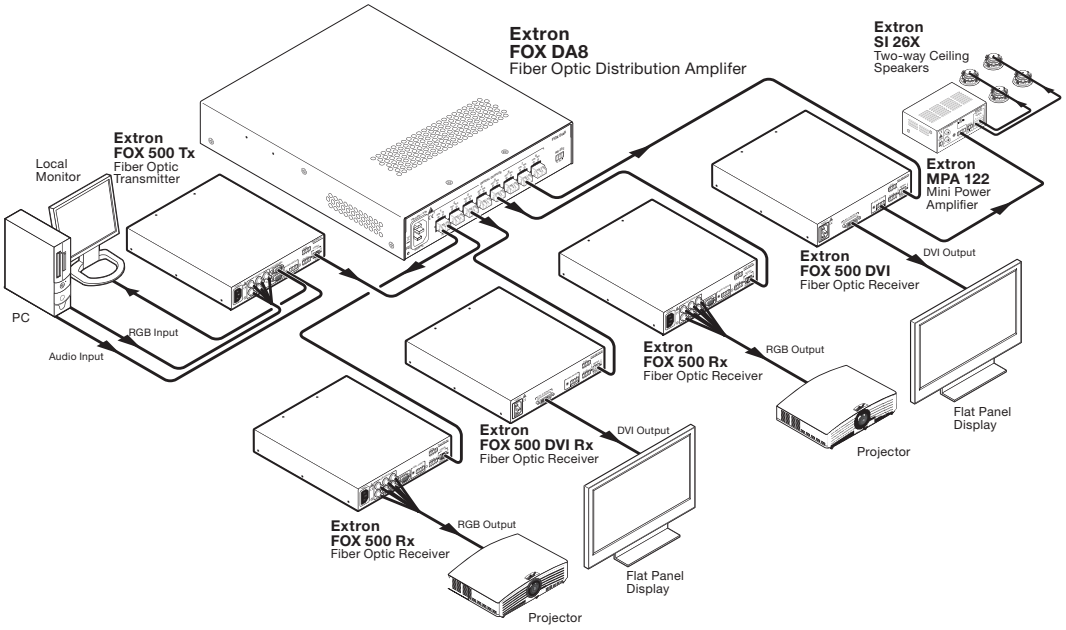


Figure 1. Typical FOX DA8 Application

NOTES:
- Compatible optical signals are digital signals from 2.0 Mbps through 4.25 Gbps that are sent and received via fiber optic SFP modules. The FOX DA8 supports all compatible optical signals, whether transmitted or received by an Extron fiber optic system component or not.
- The video component of the signal from an Extron Tx can be either VGA - UXGA RGB video, digital visual interface (DVI) video, or SDI/HD-SDI video.
- The serial component of the signal is for applications such as projector control and transmitter control of the receiver.

The FOX DA8 actively splits the proprietary signal into eight identical optical signals and outputs the signals on fiber optic cables to compatible receivers.

NOTES:
- The eight optical outputs are identical.
- The FOX DA8 does not support transmission of a return (Rx-to-Tx) serial data stream.
- The switcher can receive and send the proprietary signal from and to any compatible Extron fiber optic transmitter, receiver, or switcher (see "Reference Information" for a list of compatible products).

The connected receivers convert the proprietary signals back to video (RGB, DVI, or SDI/HD-SDI, depending on the source transmitter and the receiver), audio, and serial RS-232 communication, and output the signals locally. For video resolutions up to 1600x1200, the video outputs for the receivers are a perfect, pixel-for-pixel or digital recreation of the video signal input to the FOX DA8 via a transmitter.

Features

- **Ultra high performance** — Outputs up to eight perfect, pixel-by-pixel RGBHV or digital video transmissions to compatible receivers. The FOX DA8 can handle analog video resolutions up to 1600x1200 at 60 Hz. Higher resolutions can be transmitted, but with some loss of video quality.
- **Optical input and outputs —** The FOX DA8 inputs and outputs the optical signal on LC video connectors.
- **Active and individually isolated outputs —** The FOX DA8 uses active signal splitting to maintain equal transmitter power to all outputs, maximizing distance capabilities by ensuring full availability of optical loss budget for each output.
- **System video output** — When the optical input is from a FOX 500 or FOXBOX Tx (rather than a FOX HD-SDI), the video portion of the optical video output can be decoded to either RGB video or DVI video, depending on the receiver connected.
- **Rack mounting** — The unit is rack mountable in any conventional 19 inch wide rack, using an Extron full size rack shelf.
- **Power** — The 100 VAC to 240 VAC, internal power supply provides worldwide power compatibility

Installation and Operation

The topics covered in this section are:

- Rear Panel Features
- Front Panel Features
- System Operation

Rear Panel Features

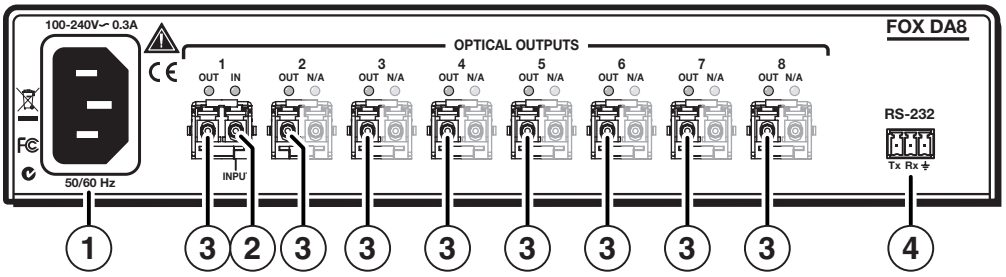


Figure 2. FOX DA8 Connectors

WARNING: This unit outputs continuous invisible light, which may be harmful and dangerous to the eyes; use with caution. For additional safety, plug the attached dust caps into the optical transceivers when the fiber optic cable is unplugged.

NOTES:
- Singlemode and multimode devices are ***not*** interchangeable. Ensure that you connect transmitting and receiving devices that are compatible with the FOX DA8.
- Ensure that you use the proper fiber cable for your system. Typically, singlemode fiber has a yellow jacket and multimode cable has an orange jacket.
- In this guide, the term "sending connector" refers to an LC connector on a device that outputs a fiber optic signal. The term "receiving connector" refers to an LC connector that receives an optical signal.

① **AC power connector —** Plug a standard IEC power cord into this connector to connect the FOX DA8 to a 100 VAC to 240 VAC, 50 or 60 Hz power source.

② **Input connector and LED** —

NOTES:
- The input (right-hand) LC connector for transciever block 1 is the only functional input connector.
- The right-hand LC connectors are not functional for transceiver blocks 2 through 8.

Optical transceiver block 1 Input connector — For one-way video, audio, and serial communications from the transmitter to the FOX DA8 (for distribution to the receivers, connect a fiber optic cable to the block 1 optical transceiver input (right-hand) LC connector.

Connect the far end of this fiber optic cable to the sending connector on the transmitter or other compatible Extron device.

Optical transceiver block 1 Input LED — When lit, the link is active (light is received from the transmitter).

NOTES:
- The input (right-hand) LED indicates the light link for transceiver block 1.
- The right-hand LEDs for transceiver blocks 2 through 8 may light, but do not indicate an input to that connector.

③ **Output connectors and LEDs** —

Connectors — For one-way video, audio, and serial communications from the FOX DA8 to the receivers, connect up to eight fiber optic cables to the output LC connectors on transceiver blocks 1 through 8.

Connect the far ends of these fiber optic cables to the receiving connectors on the receivers or other compatible Extron devices.

LEDs — These LEDs are always lit, whether the output is active (unmuted) or not.

④ **RS-232 port —** For serial control of the DA, connect a host device, such as a computer, touch panel control, or RS-232 capable PDA, via this 3-pole captive screw connector (see **figure 3** for how to wire this connector).

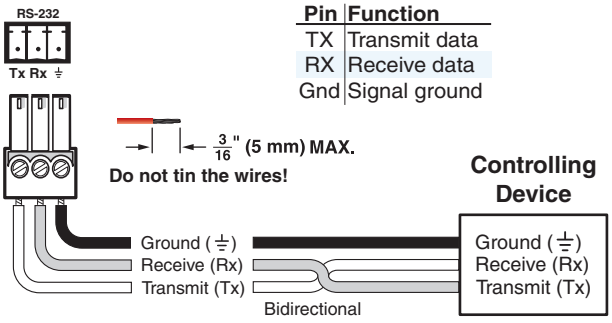


Figure 3. RS-232 Connectors

NOTES:
- The length of exposed wires is critical. The ideal length is 3/16 inches (5 mm).
- If the stripped section of wire is longer than 3/16 inches, the exposed wires may touch, causing a short circuit.
- If the stripped section of wire is shorter than 3/16 inches, wires can be easily pulled out even if tightly fastened by the captive screws.

This port is RS-232 only, with the following protocols:

- 9600 baud
- 1 stop bit
- no parity
- no flow control
- 8 data bits

Front Panel Features

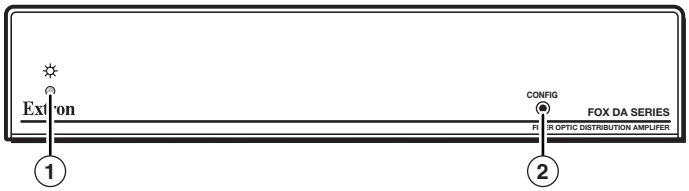
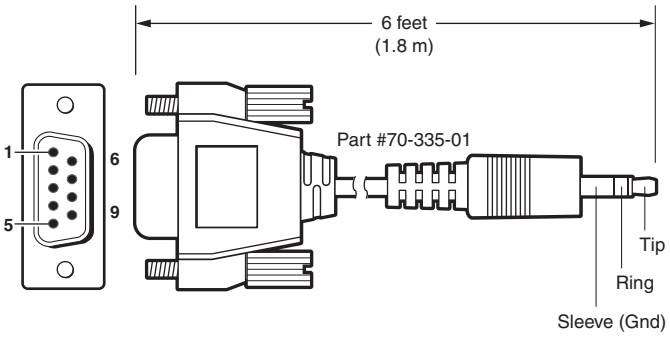


Figure 4. FOX DA8 Front Panel Features

① **Power LED —** This LED lights when power is applied to the unit.

② **CONFIG port** — This 2.5 mm mini stereo jack serves the same serial communications function as the rear panel RS-232 port, but is easier to access than the rear port after the unit has been installed and cabled. The optional 9-pin D to 2.5 mm mini jack TRS RS-232 cable, part number **70-335-01** (see **figure 5**), can be used for this connection.



9-pin D	Connection	TRS Plug
Pin 2	Computer RX line	Tip
Pin 3	Computer TX line	Ring
Pin 5	Computer signal ground	Sleeve

Figure 5. Optional 9-pin TRS RS-232 Cable

This port is RS-232 only, with the following protocols:

- 9600 baud
- 1 stop bit
- no parity
- no flow control
- 8 data bits

NOTE: The maximum distance from the FOX DA8 to the controlling device can vary up to 200 feet (61 m). Factors such as cable gauge, baud rates, environment, and output levels (from the unit and the controlling device) all affect transmission distance. Distances of about 50 feet (15 m) are typically not a problem. In some cases, the unit may be capable of serial communications via RS-232 up to 250 feet (76 m) away.

System Operation

After the transmitter, the FOX DA8, the receivers, and their connected devices are powered up, the system is fully operational. If any problems are encountered, ensure all traditional and fiber cables are routed and connected properly:

- Ensure that the video source and the displays are properly connected to the transmitter, the FOX DA8, and the receivers, and that all equipment has power applied.
- Ensure that the rear panel Input monitoring LED (see figure 2, **item** ②) is indicating correctly for your system configuration.

NOTE: If problems persist, call the Extron S3 Sales & Technical Support Hotline (see **Contact Information** for the phone number in your region of the world).

Remote Control

The topics covered in this section are:

- **Serial Ports**
- **Simple Instruction Set™ Control**
- **FOX Extender Program**

Serial Ports

The FOX DA8 has two serial ports that can be connected to a host device such as a computer running the HyperTerminal utility, an RS-232 capable PDA, or a control system. These ports make serial control of the DA8 possible. The serial ports are:

- The **rear panel RS-232** port on a 3-pin captive screw connector
- The **front panel CONFIG (RS-232) port** on a 2.5 mm mini stereo jack

Simple Instruction Set™ Control

Host-to-interface Communications

The Extron Simple Instruction Set (SIS) commands consist of one or more characters per field. No special characters are required to begin or end a command character sequence. When a command is valid, the unit executes the command and sends a response to the host device. All responses from the unit to the host end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

Start-up Message

When a local event, such as a front panel operation or error condition, occurs, the unit responds by sending a message to the host. The unit-initiated messages are listed below:

`(c) COPYRIGHT 2009, EXTRON ELECTRONICS FOX 4G DA8,`

`Vx.xx, 60-927-xx↵↵`

The FOX DA8 issues the copyright message when it first powers on. *Vx.xx* is the firmware version number, 60-927-*xx* is the part number.

Error Responses

When the unit receives a valid SIS command, it executes the command and sends a response to the host device. If the unit is unable to execute the command because the command is invalid or it contains invalid parameters, the unit returns an error response to the host. The error response codes are:

`E10 – Invalid command↵`

`E12 – Invalid output number↵`

`E13 – Invalid range↵`

Timeout

Pauses of 10 seconds or longer between command ASCII characters result in a timeout. The command operation is aborted with no other indication.

Using the Command and Response Table

The **Command and Response Table for SIS Commands** is on page 10. Lower case letters are acceptable in the command field. Symbols are used throughout the table to represent variables in the command/response fields. Command and response examples are shown throughout the table. The following ASCII to HEX conversion table (see **figure 6**) is for use with the command and response table.

ASCII to HEX Conversion Table																			
	20	!	21	"	22	#	23	$	24	%	25	&	26	'	27
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
0	30	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	40	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	50	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	60	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	70	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B	l	7C	}	7D	~	7E	DEL	7F

Esc 1B CR 0D LF 0A

Figure 6. ASCII to HEX Conversion Table

Symbol Definitions

The following symbols (variables) are used in the **command and response table**. The symbols represent variables in the unit-initiated messages and the command and response table fields.

↵ = CR/LF (carriage return/line feed)

• = space

X1	= Output	1 through 8
X2	= Mute status	0 = off (unmuted) 1 = on (muted)
X3	= Firmware version	V*x.xx*
X4	= Transceiver module status	00000000 = no light input 10000000 = light input
X5	= Temperature	*nnn*F = whole degree Fahrenheit
X6	= Transceiver module status	0 = no module installed 1 = multimode 2 = singlemode

Command and Response Table for SIS Commands

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Channel Mute			
NOTE: The channel mute commands mute the data on the output only. The output continues to emit light.			
Mute output	X1*1B	VmtX1*1↵	Blank data on optical output X1.
Unmute output	X1*0B	VmtX1*0↵	Output data on optical output X1.
Show video mute status	X1B	X2↵	Output X1 data output mute status is X2 (0 = unmuted, 1 = muted).
Mute all outputs	1*B	Vmt1↵	Blank data on all optical outputs.
Unmute all outputs	0*B	Vmt0↵	Output data on all optical outputs.
Show mute status of all outputs	EscVM↵	X2[1]X2[2]X2[3]X2[4]... X2[8]↵	Show output 1 through output 8 mute status.
Information Requests			
Information request	I	V01X08·A00X00↵	V01X08 shows the number of available inputs (1) and outputs (8) for this product. A00X00 has no meaning for this product.
Show firmware version	Q	X3↵	
Example:	Q	1.23↵	The factory-installed FOX DA8 controller firmware version is 1.23 (sample value only).
Request part number	N	60-927-*nn*↵	*nn* indicates the transmission mode. 01 = multimode, 02 = singlemode.
Show input connections status	0LS	X4↵	0000000 = no light on the input, 10000000 = light received.
Show temperature	20S	X5↵	X5 = degrees Fahrenheit.
Show transceiver module status	0*1I	X6[1]X6[2]X6[3]X6[4] ... X6[8]↵	Show all installed transceiver modules. 0 = none, 1 = multimode, 2 = singlemode.

FOX Extender Program

The Extron FOX Extender program, which communicates with the FOX DA8 via the rear panel RS-232 port or front panel Config port of the unit, provides an easy way to operate the DA8.

The program is compatible with Windows 2000, Windows XP, or later. Updates to this program can be downloaded from the Extron website (**www.extron.com**).

Installing the Software

The program is contained on the Extron Software Products DVD. Install the software as follows:

1. Insert the DVD into the drive. The installation program should start automatically. If it does not self-start, run **`Launch.exe`** from the DVD.
2. The Extron software DVD window appears (see **figure 7**).

Figure 7. Software CD Window

3. Click the **`Software`** (①) tab (see **figure 7**).
4. Scroll to the desired program and click **`Install`** (see **figure 8**).

Figure 8. Software Installation

5. Follow the on-screen instructions. By default, the Windows installation creates a `C:\Program Files\Extron\FOX_Extenders` directory, and it places the following four icons into a group folder named `Extron Electronics\FOX Extender WCP`:
   - Check for FOX Extender updates
   - FOX Extender WCP
   - FOX Extender Help
   - Uninstall FOX Extender WCP

Starting the Program

Start the Extron FOX Extender program as follows:

1. Connect a Windows®-based computer to either of the DA8 serial ports (see "**Installation and Operation**").
2. Click **`Start > Programs > Extron Electronics > FOX Extender WCP > FOX Extender WCP`**.

The `Communication Setup` window appears (see **figure 9**).

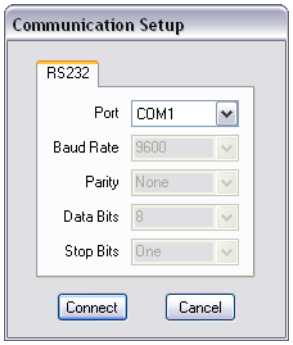


Figure 9. Communication Setup Window

3. Select the Com port to which your DA8 is connected. Click **OK**.

   The FOX Extender program window appears (see **figure10**).

4. Mute or unmute individual outputs or all outputs by clicking the appropriate buttons.

WARNING: The channel mute command mutes the data on the output only. The output continues to emit light.

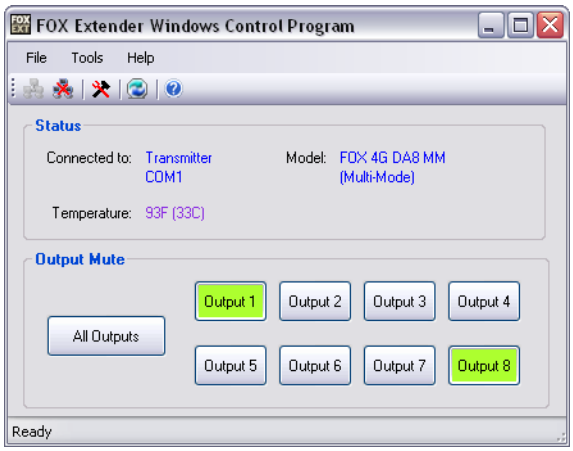


Figure 10. FOX Extender Program Window

Firmware Upgrade

Firmware can be upgraded via the front panel Configuration port of the unit only, using the Extron Firmware Loader utility from the FOX Extender program.

Upload replacement firmware as follows:

1. Visit the Extron website, **www.extron.com**, click the **Download** tab.
2. On the Download Center page, click the **Firmware** (①) link (see **figure 11**).

Figure 11. Accessing Firmware Upgrade Files

3. Select the appropriate firmware files to download and copy them to your computer.

   Note the folder to which you save the firmware files.

4. In the Windows Explorer or other file browser, double-click the downloaded executable (*.exe) files to self-extract the firmware files.
5. Connect a Windows-based computer to the front panel Configuration port of the unit to be updated (see "**Installation and Operation**").
6. Start the FOX Extender program (see "**Starting the Program**").

7. Click **Tools** > **Update Firmware**. The Extron Firmware Loader appears (see **figure 12**).

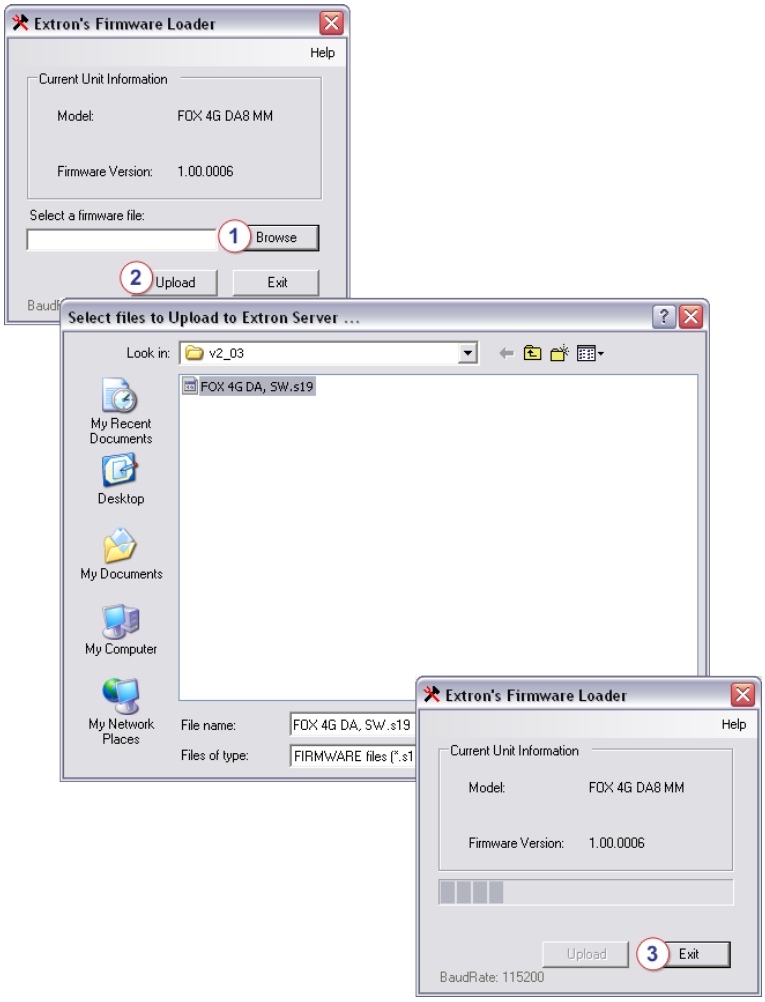


Figure 12. Firmware Upload

8. Click **Browse** (①). The open file window appears.
9. Navigate to the folder where you saved the firmware upgrade file. Select and open (double-click) the file. The Firmware Loader returns to the top.

> **NOTE:** Valid firmware files **must** have the file extension ".S19". Any other file extension is not a firmware upgrade for your FOX DA.

10. Click **Upload** (②). The File Loader reports, "`This process could take several minutes. Please wait..`" and then displays the status of the upload.
11. When the Firmware Loader reports, "`Transfer complete!`", click the **Exit** (③) button.
12. Cycle the power for the FOX DA.

Specifications

Optical Specifications

NOTE: These amplifiers are class 1 laser products. They meet the safety regulations of IEC-60825, FDA8 21 CFR 1040.10, and FDA8 21 CFR 1040.11.

Number/type	
Input	1 singlemode or multimode fiber optic
Output	8 singlemode or multimode fiber optic
Connectors	8 LC connectors
Operating distance	
Singlemode	30 km (18.75 miles) with singlemode (SM) cables with an Extron singlemode Tx/Rx unit
Multimode	300 m (985') with 62.5 µm multimode (MM) cables with an Extron multimode Tx/Rx unit 1 km (3280') with 50 µm multimode (MM) cables with an Extron multimode Tx/Rx unit 2 km (6561') with 50 µm 2000 MHz bandwidth laser multimode cable with an Extron multimode Tx/Rx unit

NOTE: Operating distance is approximate. These are typical distances. The maximum distance may be greater than these typical numbers depending on factors such as fiber type, fiber bandwidth, connector splicing, losses, modal or chromatic dispersion, environmental factors, and kinks.

Nominal peak wavelength	850 nm for MM model, 1310 nm for SM model
Data rate	4.25 Gbps
Transmission power	
Singlemode	-5 dBm, typical
Multimode	-5 dBm, typical
Maximum receiver sensitivity	
Singlemode	-18 dBm, typical
Multimode	-12 dBm, typical
Optical loss budget	
Singlemode	13 dB, maximum
Multimode	7 dB, maximum

Control/Remote

Serial control ports	1 RS-232, 3.5 mm captive screw connector, 3 pole (rear panel) 1 RS-232, 2.5 mm mini stereo jack (front panel)
Baud rate and protocol	9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations	Captive screw connector: 1 = TX, 2 = RX, 3 = GND Mini stereo jack: tip = TX, ring = RX, sleeve = GND
Program control	Extron control/configuration program for Windows® Extron Simple Instruction Set (SIS™)

General

Power	100 VAC to 240 VAC, 50-60 Hz, 20 watts, internal
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, vents on top and sides
Mounting	
Rack mount	Yes, with optional 1U, 9.5" deep rack shelf)
Furniture mount	Yes, with optional under-desk mounting kit and through-desk mounting kit
Enclosure type	Metal
Enclosure dimensions	1.7" H x 8.7" W x 9.5" D (1U high, half rack wide) (4.3 cm H x 22.1 cm W x 24.1 cm D) (Depth excludes connectors.)
Product weight	2.3 lbs (1 kg)
Shipping weight	4 lbs (2 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, CUL, UL
EMI/EMC	CE, C-tick, FCC Class A, FDA8 Class 1, ICES, VCCI,
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTES: All nominal levels are at ±10%.

Specifications are subject to change without notice.

Reference Information

The topics covered in this section are:

- Part Numbers
- Rack Mounting

Part Numbers

FOX DA8 Part Numbers

Models	Part Number
FOX DA8 SM (singlemode)	60-927-02
FOX DA8 MM (multimode)	60-927-01

Included Parts

Included Parts	Part Number
IEC power cord	
3-pole captive screw audio connector	
Installation guide	
Extron Software Products CD (FOX Extender program)	
(1) 10 foot LC-LC duplex patch cables (SM or MM, depending on the model)	

Optional Accessories

Accessories	Part Number
9-pin D to 2.5 mm mini jack TRS RS-232 cable	70-335-01
RSU 129 9.5" 1U universal rack shelf kit	60-190-01
RSB 129 9.5" 1U basic rack shelf	60-604-01
MBU 125 under desk mounting kit	70-077-01
MBD 129 through desk mounting kit	70-077-02

Compatible Equipment

The FOX DA8 is compatible with the Extron fiber optic receivers and matrix switchers shown in the following tables:

Fiber Optic RGB Video Models	Part Number
FOX 500 (RGB) Tx/Rx SM (set)	60-746-02
FOX 500 (RGB) Tx SM (individual unit)	60-746-12
FOX 500 (RGB) Rx SM (individual unit)	60-746-22
FOX 500 Tx/Rx (RGB) MM (set)	60-746-01
FOX 500 Tx (RGB) MM (individual unit)	60-746-11
FOX 500 Rx (RGB) MM (individual unit)	60-746-21
FOXBOX Tx VGA SM	60-934-12
FOXBOX Rx VGA SM	60-934-22
FOXBOX Tx VGA MM	60-934-11
FOXBOX Rx VGA MM	60-934-21

FOX DVI Models	Part Number
FOX 500 DVI Tx SM (individual unit)	60-859-12
FOX 500 DVI Rx SM (individual unit)	60-859-22
FOX 500 DVI Tx MM (individual unit)	60-859-11
FOX 500 DVI Rx MM (individual unit)	60-859-21
FOXBOX Tx DVI SM	60-935-12
FOXBOX Rx DVI SM	60-935-22
FOXBOX Tx DVI MM	60-935-11
FOXBOX Rx DVI MM	60-935-21

FOX AV Models	Part Number
FOX Tx AV SM	60-941-12
FOX Rx AV SM	60-941-22
FOX Tx AV MM	60-941-11
FOX Rx AV MM	60-941-21

FOX 3G HD-SDI Models	Part Number
FOX 3G HD-SDI SM	60-901-01
FOX 3G HD-SDI MM	60-900-01

FOX Matrix 14400 Switcher	Part Number
FOX Matrix 14400 enclosure	60-969-01
Singlemode I/O card	70-771-02
Multimode I/O card	70-771-01

Other Fiber Optic Models	Part Number
FOX SW8 SM	60-984-02
FOX SW8 MM	60-984-01
FOX 500 DA6 SM	60-863-02
FOX 500 DA6 MM	60-863-01

Mounting the Unit

CAUTION: Installation and service must be performed by authorized personnel only.

The 1U high, half-rack width unit can be placed on a tabletop, mounted on a rack shelf, or mounted under or through a desk or other furniture. To rack mount the FOX DA8, see the instructions provided with the rack mounting kit (see **Optional Accessories** for available rack mount kits).

UL Guidelines

The following Underwriters Laboratories (UL) guidelines pertain to the installation of the FOX DA8 into a rack (see figure 2).

1. **Elevated operating ambient** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consider installing the equipment in an environment compatible with the +122 °F (+50 °C) maximum ambient temperature (Tma) specified by Extron.
2. **Reduced air flow** — Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
3. **Mechanical loading** — Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
4. **Circuit overloading** — Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
5. **Reliable earthing (grounding)** — Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (such as the use of power strips).

Mounting Options

Mount the 1U high, half rack width FOX DA8 on any of the following:

Rack Mounting:

- RSU 129 — 9.5 inches 1U universal rack shelf kit (part number **60-190-01**)
- RSB 129 — 9.5 inches 1U basic rack shelf (part number **60-604-01**)

Furniture Mounting:

- MBU 125 — Under desk mounting kit (part number **70-077-01**)

Through-desk Mounting:

- MBD 129 — Through desk mounting kit (part number **70-077-02**)

Extron® Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:
Extron Electronics
1001 East Ball Road
Anaheim, CA 92805
U.S.A.

Japan:
Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe, Africa, and the Middle East:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:
Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:
Extron Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or modifications were made to the product that were not authorized by Extron.

NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: (714) 491-1500 **Europe**: 31.33.453.4040
Asia: 65.6383.4400 **Japan**: 81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

Extron **USA - West** Headquarters	Extron **USA - East**	Extron **Europe**	Extron **Asia**	Extron **Japan**	Extron **China**	Extron **Middle East**
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+1.714.491.1500 **+1.714.491.1517** FAX	**+1.919.863.1794** **+1.919.863.1797** FAX	**+31.33.453.4040** **+31.33.453.4050** FAX	**+65.6383.4400** **+65.6383.4664** FAX	**+81.3.3511.7656** FAX	**+86.21.3760.1568** **+86.21.3760.1566** FAX	**+971.4.2991880** FAX

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